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No. R. 2574—*Ft.* 3-04-22, *dated* 20*th September* 1904.

The following papers relating to the outbreak of a fatal disease among wild animals and Agricultural and Amrut Mahal cattle in Mysore are published for general information :—

(1) Letter No. 198 E. 1, dated 9th July 1904, from M. Muttannah, Esq., B. A., Offg. Conservator of Forests in Mysore, to B. K. Venkatavaradaiyengar, Esq., Offg. Secretary to the Government of His Highness the Maharaja of Mysore, General and Revenue Departments.

I have the honor to submit herewith for the information of Government, copy of a report from the District Forest Officer, Mysore, regarding an epidemic among elephants and other quadrupeds. The disease makes its appearance in the form of buboes between the hind legs which either remain stationary or travel towards the neck. The animal after this usually gives up its usual leaf-food, but takes small quantities of rice mixed with jaggory and within two or three days of the attack dies. All the four elephants stationed at Kakankote caught the infection; three have died and the fourth is showing signs of recovery. I have asked the District Forest Officer to send the buboes of any animal that may hereafter die from the disease to the Government Bacteriologist for examination.

2. Of the three elephants that died, "Kadampyari" was an old animal. "Ganesh" was about 35 years old and "Wasp," the well-known shikari elephant, was in the prime of life. The death of these elephants and, especially, of Wasp who cannot be replaced, is a very serious loss to the Department. This misfortune has happened just at a time when the want of sufficient elephants for timber-dragging purposes was being seriously felt, and unless we buy or capture some elephants to replace them, our timber operations will be greatly impeded or curtailed. I, therefore, intend to submit proposals after the epidemic has disappeared to capture a few elephants to supply our immediate demands.

Copy of letter No. 12, dated 2—5th July 1904, from the District Forest Officer, Mysore, to the Conservator of Forests in Mysore.

I have the honor to report that as already reported "Kumki" elephant "Kadampyari" which was dragging timber in the Karadihalla Coupe (B type) of the Kakankote Forest, took ill about the 1st June 1904 owing to a sprain in one of her legs. Two or three days subsequently, a big swelling like a bubo appeared between the hind legs, which travelled on towards the neck. In spite of all the medicines and treatment afforded, the animal grew worse day by day and succumbed to the malady on the 7th idem. "Wasp" caught the infection on the night of the 10th and was weak and without eating any leaf-fodder on the 11th, but after the administration of certain medicines and branding the swollen part between the hind legs, it seemed to improve and was taking leaf-fodder, etc., pretty freely; but grew worse after nightfall of the 11th and died at about 5 P. M. the following day.

"Ganesh" and "Jangbahadur" were segregated at once from the sick elephant and were being taken to Antersante. Both the elephants caught the infection about the 13th and "Ganesh" became too ill to be taken beyond Karpur where it was left. "Jangbahadur" continued the journey up to Manchagowdanhalli whence it could not proceed further and so was kept there. All that could be done to save the elephants was done, but "Ganesh" grew worse day after day and died on the 18th. "Jangbahadur" has been improving and is now out of danger.

Four wild elephants, three males and one female, were found dead in the Kakankote Forest round about Segurbadi. Also one bison (male or female not reported) five sambers (four males and one female) and deer and other animals have been found dead in different parts of the forest.

The tusks of all the dead male elephants (one had only one tusk) and the horns of samber, etc., have been removed by the forest people and preserved.

No further mortality among wild elephants and other animals has been reported since, and no carcass of either elephant or other animals has been found in the forests for some days past.

One of the Palace elephants (the "Muckna") also caught the bubo disease and fell a victim to it on the 25th ultimo, and it is rumoured that three more are affected by the disease.

Cattle are also dying from a similar disease. They also develop buboes and die very suddenly. About eighteen pairs of draught bulls have already died of the disease and good many are reported to be suffering from the complaint.

The outbreak of the disease among cattle is a very serious matter and will materially affect the welfare of the agricultural classes who in slack seasons carry on timber carting and other works. If the disease should take an epidemic from among cattle, the out-look will be a very gloomy one for the raiyats in the parts so affected by the disease.

It will be advisable to give explicit instructions to all Revenue Officers to segregate all the healthy cattle on the appearance of the first symptoms of the disease among any village cattle and keep the healthy or uninfected portion of the cattle as far away from villages and in as small groups as possible, to avoid wholesale destruction of cattle, should the disease make its appearance among segregated cattle.

(2) *Proceedings of the Government of His Highness the Maharaja of Mysore.*

Read—

Letter No. 198, dated 9th July 1904, from the Conservator of Forests in Mysore, reporting the death of elephants at Kakankote from some epidemic disease.

No. R. 603-6—FT. F. 3-04.

ORDER THEREON.—It is apprehended that up to the present no attempt has been made to diagnose the disease. It is unlikely that much can be done now, but the matter is one of very general interest and the Government of His Highness the Maharaja consider that every endeavour should be made to find out the nature of the disease, so that precautions may be adopted against its spread, if possible. If animals are still dying, Mr. Narasimiengar, the Veterinary Officer and Dr. Sreenivasa Rao, the Government Bacteriologist, should at once be asked to proceed and gather information on the spot. The Conservator will report whether the epidemic has stopped or shows signs of increasing and the total number of cases which have occurred.

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(3) Letter No. 828, dated Bangalore, 28th July 1904, from M. Muttannah, Esq., R. B., Officiating Conservator of Forests in Mysore, to B. K. Venkatavaradaiyengar, Esq., Officiating Secretary to the Government of His Highness the Maharaja of Mysore, General and Revenue Departments.

With reference to Government Order No. R. 603-6-3-5, dated 26th instant, I have the honor to report that the Forest Sub-Divisional Officer, Heggaddevankote, reports in his telegram of this date that one elephant in Kakankote, six in Begur and one in Ainurmarigudi have been found dead since the 2nd July. This together with the four previously reported make up twelve wild elephants that have died from the disease. The number of other wild animals found dead is twenty-one. The disease, it is stated, is still raging. I have, therefore, asked the Senior Surgeon to send at once Dr. Sreenivasa Rao, and Mr. Narasimha Iyengar, the Veterinary Officer, to Kakankote to make the necessary investigation as regards the nature of the disease as ordered by Government.

2. Among our kumki elephants, there have been no more cases. Jangbahadur which was attacked by the disease on the 13th instant, is reported to have recovered.

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(4) Letter No. 824—Ft. F. 3-04, dated the 1st August 1904, from the Secretary to the Government of His Highness the Maharaja of Mysore, to the Conservator of Forests in Mysore.

With reference to your letter No. 828, dated the 28th July 1904, I am directed to state that the Senior Surgeon and the Military Assistant have been requested immediately to depute Dr. Sreenivasa Row and Veterinary Assistant Surgeon Mr. Narasimiengar, to investigate the cause of the reported extraordinary mortality among wild elephants and Amrut Mahal cattle, and to request you to give intimation of deaths, without delay to the Senior Surgeon.

(5) Letter No. 1091—Ft. F. 3-04, dated the 8th August 1904, from the Secretary to the Government of His Highness the Maharaja of Mysore, to M. Muthannah, Esq., Rai-Bahadur, Conservator of Forests in Mysore.

In continuation of this office No. 824-3-7, dated 1st August 1904, I am directed to forward herewith a copy of D. O. letter, dated the 4th idem, from the Senior Surgeon and Sanitary Commissioner with the Government of Mysore, on the subject of investing the disease prevailing amongst wild elephants and to request that you will be so good as to arrange in the best manner suitable with Col. Smyth personally and to the needful in the matter.

(6) No. 92, dated Mysore, 1st August 1904, from M. Kantaraj Urs, Esq., Deputy Commissioner, Mysore District, to B. K. Venkatavaradaiyengar, Esq., Secretary to the Government of Mysore in the General and Revenue Departments, through the Revenue Commissioner in Mysore.

I have the honor to state that the Amildar of Heggaddevankote Taluk reports that, from enquiries instituted during his inspection tour, he came to know that bullocks had died, having developed plague symptoms in Kittur, Uyyamballi, Hosaholalu, Nerle and other villages.

He further reports that elephants which had formerly fled from the Kakankote jungle owing to plague are returning, a fact which seems to indicate that the said jungle is now free from infection.

The Amildar's report No. 35 of 27th July 1904, which describes fully the course of the disease is herewith transmitted for your information.

(7) Letter No. 690—F. 25 of 1904-05, dated 26th August 1904, from Lt.-Col. R. G. Jones, I. A., Military Assistant to the Government of His Highness the Maharaja of Mysore, to B. K. Venkatavaradaiyengar, Esq., Secretary to the Government of His Highness the Maharaja of Mysore, General and Revenue Departments.

With reference to your unofficial Memorandum No. 14 of the 1st instant, I have the honor to enclose for information copies of the correspondence and to state that the Senior Surgeon to the Government of Mysore, having elected to send Dr. Sreenivasa Rao and the Assistant Veterinary Surgeon, I. S. Regiment, to investigate the cases reported, no application was made

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for the services of the Inspector General, Civil Veterinary Department, or other British Veterinary Officer to inspect the locality in question.

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(8) Letter No. 1913, dated 29th August 1904, from T. Ananda Row, Esq., B.A., Revenue Commissioner in Mysore, to the Secretary to the Government of His Highness the Maharaja of Mysore, General and Revenue Departments.

I have the honor to submit herewith for the information of Government the extract from the diary of the Superintendent of Police of the Chitaldrug District for the week ending 20th August 1904, in original, (to be kindly returned when done with) *re* the appearance of cattle disease in the Challakere Taluk, received with Chitaldrug Deputy Commissioner's docket No. 78, dated 24th August 1904.

Diary of the Superintendent of Police, Chitaldrug, for the week ending Saturday the 20th August 1904.

Remarks of the Deputy Commissioner.

I have received no report from the Amildar. Stringent orders have been issued to him to segregate the healthy cattle and take other necessary precautions to check the spread of the disease. One cow and two calves are reported to have died on the 10th instant.

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The cattle disease reported to be prevalent in the Mysore District, seems to have made its appearance in this district. A report comes from Parasurampur station limits of the Challakere Taluk, that some cattle died suddenly and they were found to have buboes in their necks. I am calling for a detailed report with particulars as to its origin or cause, and whether this disease has been reported in any of the villages of the Tumkur District.

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(9) Letter No. G. 149, dated Bangalore, 2nd September 1904, from Lieut.-Col. John Smyth, M.D., I.M.S., Offg. Senior Surgeon and Sanitary Commissioner with the Government of His Highness the Maharaja of Mysore, Bangalore, to B. K. Venkatavaradaiengar, Esq., Secretary to the Government of His Highness the Maharaja of Mysore, General and Revenue Department, Bangalore.

With reference to the Proceedings of the Government of His Highness the Maharaja of Mysore and order thereon No. R. 603-6-3-5, dated 26th July 1904, I have the honor to forward the accompanying report of Dr. Sreenivasa Rao, Chemical Examiner and Bacteriologist to Government, on the recent outbreak of a rapidly fatal form of disease which has been observed in the State, affecting both wild and domesticated animals including elephants.

2. The report is very complete and requires little remark by me. But perhaps, it is as well to draw attention to the fact that not only is the bacillus described by Dr. Sreenivasa Rao, not identical in all respects with that of Septicæmia infection, but there are differences between the bacilli discovered by him at Kakankote and those found at Ajjampur. Dr. Sreenivasa Rao is of opinion that these bacilli are both varieties of the B. Septicæmia Hæmorrhagica, and I am aware that the idea of there being "varieties" of bacilli is gaining ground in high quarters. The similarity of the symptoms in the cattle, etc., observed in the present outbreak certainly favours the new view. At the same time, it appears to me that the matter is of the greatest importance, and I request that should any further attacks occur, Dr. Sreenivasa Rao may be communicated with direct so that no time may be lost in starting a fresh investigation and thus perhaps confirming the opinion now expressed by Dr. Sreenivasa Rao, or by enabling him to get further information, he may perhaps find he has alighted on a new disease.

3. As this report is of the highest epidemiological importance, I think it should be communicated to the Government of India and the various local Governments.

Letter No. 80, dated 30th August 1904, from M. Sreenivasa Rao, Esq., M.A., M.D., C.M. & B. Sc., (Edin.), Chemical Examiner and Bacteriologist to the Government of Mysore, Bangalore, to Lieut.-Col. J. Smyth, M.D., I.M.S., Senior Surgeon and Sanitary Commissioner with the Government of Mysore, Bangalore.

With reference to G. O. No. R. 603-6-3-5, dated 25th July 1904, I have the honour to report as follows:—

2. Accompanied by Mr. N. Narasimha Iyengar, Veterinary Officer, Imperial Service Regiment, I went to Lingadahalli on the 28th July 1904 and returned on the 1st August. We inspected herd No. 14 reported to have been infected but found all the animals healthy. The following account of the epidemic was given by the Daroga and Servegar. The first animal was attacked on the 9th July 1904 and died in 48 hours and the last animal attacked was on the 17th July and it died on the 22nd idem. Between the 9th and 17th July seven Amrut Mahal cattle were attacked and all of them died. Between the 10th and 13th July 3 private cattle were attacked also with fatal results. The symptoms detailed to us were as follow:—The animals were observed to be dull and isolated from the herd. There was high fever with rigors, swelling of the head and face, ears drooping, tongue swollen with a sticky discharge, swelling of the neck, acrid discharge from eyes and nostrils, rumination completely lost, bowels costive, dung hard and coated with mucus and blood, swelling in groin and thigh. The average duration of illness was 3 days, the shortest having been 2 and the longest 5. As there were no fresh attacks after the 22nd July and as all the dead animals had been either

skinned, burnt or left in the jungles we were obliged to content ourselves with examining the clotted blood on the hides of 2 animals and the clots of blood found on the spot where they had been skinned. Though quite dry, they, however, contained swarms of bacilli in an uncontaminated condition. The blood was examined at once microscopically and cultures were made from it on agar-agar media and in the course of 24 hours good growths were observed. As these bacilli were found to be identical with those isolated from the animals examined at Kakankote, a description of their characters will be given later on.

3. We left for the Kakankote Forest on the 7th August 1904 and on our way we enquired into the condition of the cattle at Hampapur, Heggaddevankote and Antersante. At Hampapur we examined the blood of a bullock which was recovering from the effects of a swelling on the right flank which had first appeared three weeks ago and broke out as a large ulcer a few days before our arrival there. This blood also showed the same kind of bacilli as had been seen in the clotted blood of the animals at Lingadahalli. Mr. H. Srinivasa Rao, the Assistant Conservator of Forests, furnished the following history of the attacks amongst the elephants. An elephant of the name of "Khadam Pari" returned from Kymara where it was carrying timber to Kakankote on [illegible]th May 1904. She fell ill on the 2nd June with high fever and huge swellings under t[illegible]d was unable to move. She was off her feed for five days with colicky syn[illegible]at 10 A.M., on the 7th June. The elephants "Wasp", "Ganesh" and "Jung Bahadur" helped in dragging "Khadam Pari" to the pit where it was buried. "Wasp" fell ill on the 10th June and died on the 12th with similar symptoms. "Ganesh" was attacked on the 13th and died on the 18th. "Jung Bahadur" was also attacked at the same time as "Ganesh" but is now recovering. At Heggaddevankote, the Amildar gave the following history of the epidemic amongst the cattle in his taluk :—In the latter part of June one Chilligauda returned from Outangadi *via* Kakankote with 4 bullocks, lost one on the road with swellings and another in his village of Uggambhalli to which he returned. The disease seems to have spread to Sogahalli from Kakankote to which 4 bullocks had gone. Nine animals in all were attacked at Sogahalli and all died. Of the 5 animals that returned from Kakankote to Nisna, all were attacked but 3 died with swellings and 2 recovered. Similarly 50 cattle died in 13 villages in all. We were also informed that 25 heads of bison and deer and 14 wild elephants were found dead at various times. We got exhumed 2 elephants, one at Kakankote and the other at Kharapur, but the process of decomposition was so far advanced that nothing could be made out of them. At Antersante the blood of "Jung Bahadur" which was recovering was examined and it was found to contain bacilli whose characters are described below :—

The bacilli are 1 micro-millimetre long and half as broad. They are strongly motile and stain easily with the usual aniline dyes. They do not form any spores and, so far as observations go at present, they preserve their vitality in spite of desiccation for at least 7 days. They multiply at the ordinary temperature of the room, *i.e.*, 25·5°C., but grow more luxuriantly in the incubator at 37°C. They do not liquify gelatine but grow on the surface as greyish white colonies. In a stab culture the growth appears only along the track of the needle. In ordinary bouillon, growth is rapid and the turbidity is uniform. On agar-agar and glycerine-agar, they grow forming greyish white colonies. On potatoes the growth is very thin and hardly perceptible. Growth in peptone solution gives indol reaction. Blue litmus milk is curdled and turned red in 48 hours showing that acid is produced. Anærobic cultivation on glucose-formate broth shows a good growth with an evolution of plenty of gas. When rabbits are inoculated with small doses of these bacilli, they succumb in the course of 24 hours with all symptoms of intense septicæmia. The bacillus was recovered from the spleen and blood of the inoculated rabbits. From a study of the morphology and biology of this bacillus, I am of opinion that it is a variety of the "Bacillus Septicæmia Hæmorrhagica" described by Kitt, Heuppe and other observers who noticed it in the cattle and deer epidemic which broke out in Germany for the first time in 1878. During subsequent epidemics in 1881, 1885-86, 1889 and 1894 in parts of Germany, the same bacillus was credited with having caused the outbreak named "Deer and Cattle Disease." The symptoms then observed and the generally fatal termination of the disease tally with those observed at Lingadahalli and Kakankote, the only new feature being the attack of elephants which of course are not found in Germany. Not a single animal that was attacked at Lingadahalli recovered, while of those attacked at Kakankote, we heard of the recovery of one elephant and two bullocks only. The only treatment that appears to be of any use is the giving of good nourishing food and free stimulation by the administration of spirits. The prophylactic measures to be recommended are the isolation of the sick animals, the prevention of the healthy ones from gaining access into the infected places and the burning of dead bodies wherever practicable or deep burial so that the surface soil may not get infected.

4. We went to Ajjampur on the 20th August 1904 and inspected herd No. 3 consisting of about 150 animals including about 60 calves and found only 2 calves with rise of temperature but recovering from the attack. One of these is reported to have died on the 22nd. The disease began on the 7th August and continued till the 21st with 19 attacks and 17 deaths. The symptoms observed were that the calves gave up sucking, were falling down and getting up repeatedly probably owing to colic and had hard breathing which continued for an hour and terminated in death. Only very young calves of 2 and 3 months old were attacked, the grown up ones escaping completely. Three private calves belonging to a kavalgar were also attacked on the 15th and 16th August and died. The disease appears to have been a very

virulent one, the calves dying within 2 hours of the first symptoms observed. We held *post mortem* on 2 calves which had died shortly before our arrival there. The *post mortem* appearances were spleen enlarged to about 10 times its normal size, liver congested, intense inflammation of the large intestines and moderate inflammation of the small intestines, congestion of the lungs and slight pericarditis. Blood was taken from the spleen and heart and examined under the microscope and cultures were made. The bacilli resembled in their characters those found at Lingadahalli and Kakankote except in the following particulars. In a stab culture on gelatine the growth was not limited to the needle track but extended in all directions. On potatoes there is a thick and yellowish growth. Milk is not curdled and its blue colour is not discharged, showing that no acid is produced. Anærobic cultivation on glucose formate broth shows no growth. This bacillus is quite as virulent for rabbits as the other, the inoculated animals dying within 24 hours with symptoms of intense septicæmia. I believe this bacillus to be also a variety of the "Bacillus Septicæmia, Hæmorrhagica." Similar disease affecting very young calves has been described by Jensen. No treatment appears to be of any use as the animals die so suddenly. The same prophylactic measures may however be adopted.

5. I must not omit to acknowledge the valuable help rendered by Veterinary Officer Mr. N. Narasimha Iyengar who accompanied me in my tours. He conducted the *post mortem* examination of the calves and his knowledge of Veterinary Pathology was of great use to me in arriving at a correct diagnosis of the disease.

By Order,

B. K. VENKATAVARADAIYENGAR,
Secy. to Govt., Gen. & Rev. Dept.